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ABSTRACT

The effect of games on the development of analytic thinking and problem-solving skills in young children was studied. Eight tasks were constructed, based on Guilford's Structure of Intellect Model, and a variety of commercial games were evaluated for their ability to promote analytic thinking, problem solving, and affective skills. Using students in first grade classrooms that were already involved in using a Thinking and Reasoning Program developed by the Southwest Educational Development Laboratory as subjects, the effect of the games was studied. A method of cognitive measurement was developed based on the Guilford Model and some subtests taken from already existing tests. Using this method in a loosely controlled experiment it was found that on two (object assembly and picture completion) of the eight activities the experimental group outperformed the control group, while on the remaining six tasks there was no significant difference. (JY)

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AN EXPLORATORY STUDY OF THE EFFECTS OF GAMES ON THE DEVELOPMENT OF COGNITIVE SKILLS IN YOUNG CHILDREN

Beth T. Kennedy and Murray A. Newman

The purpose of this paper is to report the results of an exploratory study of the games component of the Thinking and Reasoning program which is designed to develop problem-solving and related skills in children, kindergarten through 2nd grade. The results reported here represent only the development to date; the program will continue to be tested through 1976.

PERSPECTIVE

A review of the sparse literature on empirical studies related to the effects of games with rules yields support for using games to increase analytic thinking and problem-solving skills. Various researchers (e.g., Avendon and Sutton-Smith, 1971 and Coleman, 1969) were found to state that rule-governed games can teach decision-making skills, encourage individual goal-oriented behavior, promote reflective thinking strategies, and help a child to assimilate new logical abilities. Research has also shown that children will persist at a task longer if it is in the form of a game.

For the past few years, the Thinking and Reasoning Program of the Southwest Educational Development Laboratory has been exploring the use of classroom games for enhancing the development of analytic thinking and problem-solving skills in 5- to 7-year-old children. The primary

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goal of the Program is to develop independent problem-solving skills in young children. This complex issue of problem solving was analyzed to determine those enabling skills to be emphasized by the Program. The analysis led to the selections of four subgoals: the development, integration and coordination of (1) analytic thinking skills; (2) related personality skills (persistence, self-confidence, etc.); (3) a five-stage, problem-solving process; and (4) process awareness and control. The games represent one part of a total program which consists of a lessons component, a games component, and a teacher training component. The lessons include four sequences of activities specifically designed to develop analytic thinking skills, problem-solving skills and related personality skills (e.g., persistence, curiosity, toleration of frustration) in young children through process awareness and control. The games component consists of a Game Center, which relies on an informal learning approach to accomplish the program goals. The Game Center is set up in the classroom and contains approximately 40 commercially available games which have been carefully chosen on the basis of an analysis of those PSI skills found to be developed through the lessons. The teacher training component provides the teacher with strategies for teaching process awareness through the games and lessons, as well as with management skills to facilitate children's independent learning. The program is intended to be taught in daily 45-minute segments throughout the school year.

The Program underwent Design Test in 1972-73 (a small-scale test in very few classrooms), and was revised heavily before proceeding

through Pilot Test. Pilot Testing was carried out during 1973-74 in six ethnically mixed classrooms in the Austin area and again in 1974-75 in 12 ethnically mixed classrooms in the Austin area. Revisions and refinements followed each testing period. The program is being Field Tested (large-scale national testing) during 1975-76 in 28 classrooms located in Louisiana, Texas, and California.

Games were initially included in the Program for the purpose of occupying those children who were not, at a particular period of time, engaged in the small-group lesson activities. After a few weeks of experiences with games in the classroom, it became apparent that games were useful for many reasons other than to help children pass time in an enjoyable way. Specifically, it became clear that commercially produced games, if carefully chosen, had the potential for promoting increases in two skill areas important in problem-solving--the cognitive area (e.g., causal reasoning, divergent production) and the affective or personality area (e.g., toleration of frustration, curiosity). (See Table 1, p. 4).

Four kinds of commercially produced games have been used in the Program: construction games like Tinkertoys, chance games like Wheelo the Fool, chance/strategy games like Parcheesi, and strategy games like checkers. When playing with chance games, the children become familiar with the rules governing games: learning to follow rules, to take turns, to work toward a goal, to cooperate with other players. Observation skills, personality skills, and social problem-solving skills can also be developed. The construction games offer many problem situations for the children to work through. For example, a child